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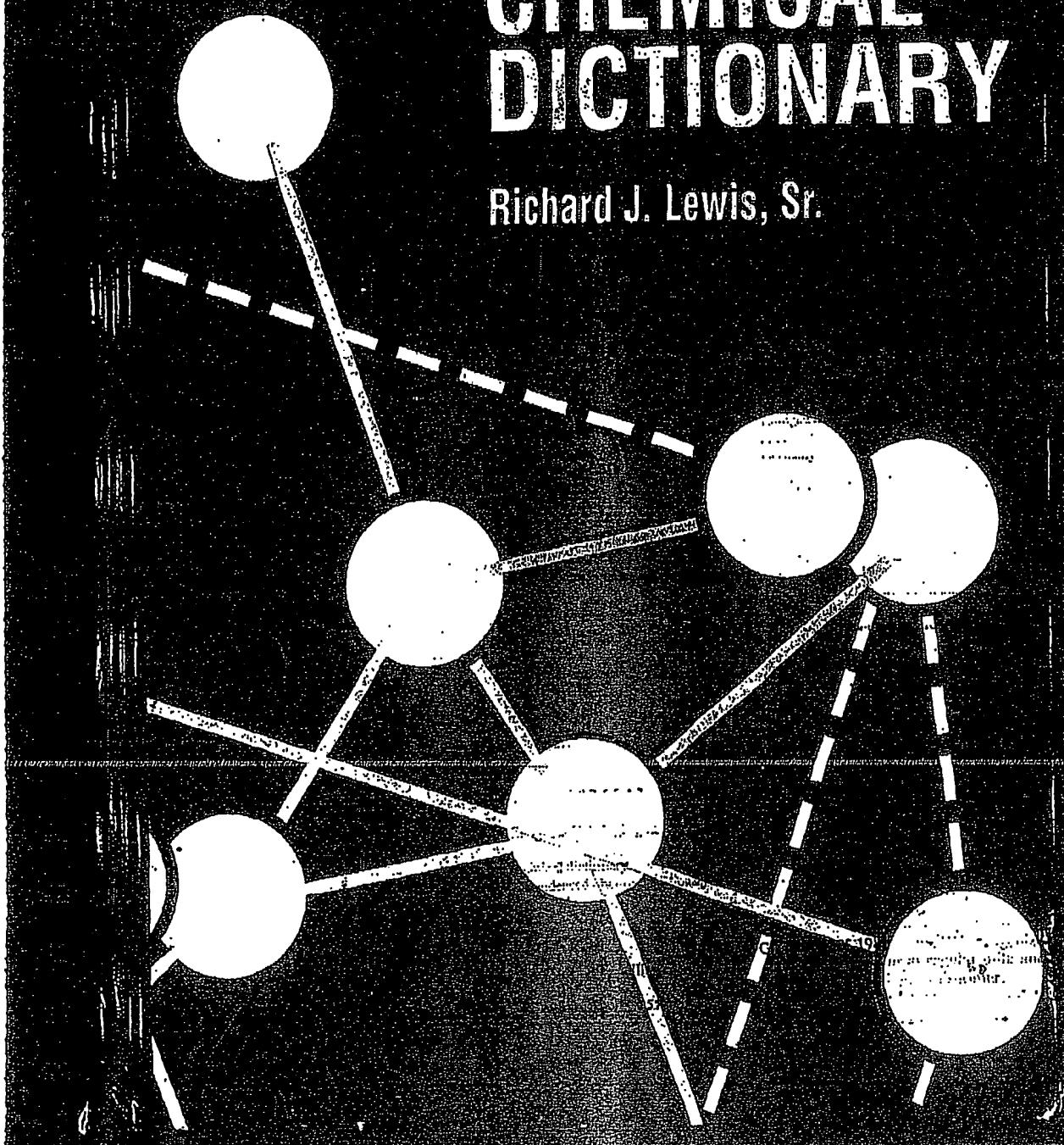
TWENTIETH EDITION

Hawley's

# CONDENSED CHEMICAL DICTIONARY

Richard J. Lewis, Sr.

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hexamethylenediene,  $C_6Br_6$ .  
Properties: Yellowish-white, slightly soluble in water, alcohol,  $bp$  100°C,  $mp$  -10°C,  $dp$  1.56 g/cm³.

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the quaternary alkyl ammonium iodides are pyrolyzed to split off alkyl iodide, which is determined gravimetrically by conversion to silver iodide or titrated as iodate.

**Herz reaction; Herz compounds.** Formation of o-aminothiophenols by heating aromatic amines with excess sulfur monochloride. The first products formed are thiazoithonium halides known as Herz compounds. If the position para to the amino group is unoccupied, chloride is substituted at this position during the reaction.

**hesperidin.** CAS: 520-26-3.  $C_{28}H_{34}O_{15}$ . A natural bioflavonoid of the flavanone group. Properties: Fine needles, mp 258-262°C, soluble in dilute alkalies, pyridine. Derivation: Extraction from citrus fruit peel. Use: Synthetic sweetener research.

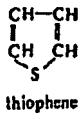
**Hess's law.** The heat evolved or absorbed in a chemical process is the same whether the process takes place in one or in several steps; also known as the law of constant heat summation.

**hetastarch.** A starch derivative containing 90% amylopectin. Use: Blood plasma volume expander.

**heteroaromatic.** See heterocyclic.

**heterozeotrope.** Azco-tropic mixture having more than one liquid phase in equilibrium with the vapor phase at the boiling points.

**heterocyclic.** Designating a closed-ring structure, usually of either 5 or 6 members, in which one or more of the atoms in the ring is an element other than carbon, e.g., sulfur, nitrogen, etc. Examples are pyridine, pyrole, furan, thiophene, and purine.



**heterogeneous.** (Latin "different kinds"). Any mixture or solution comprised of two or more substances, whether or not they are uniformly dispersed. Common examples are such diverse materials as air (a mixture of 20% oxygen and 80% nitrogen), milk, marble, paint, gasoline, blood, mayonnaise. In all such cases, the mixtures can be separated mechanically into their components. "Homogenized" milk is as heterogeneous as regular milk and the term is, strictly speaking, a misnomer. See also homogeneous; mixture.

**heterogeneous catalysis.** See catalysis, heterogeneous.

**heteromolybdates.** (heteropoly(molybdates). A large group of complex molybdenum salts and acids in which the anion contains oxygen atoms and from 2-18 hexavalent molybdenum atoms, as well as one or more other metal or nonmetal atoms (phosphorus, arsenic, iron, and tellurium). The latter are referred to as hetero atoms and any of approximately 35 elements may be present in this manner. Example:  $Na_5PMo_{10}O_{40}$ , sodium phospho-12-molybdate. The molecular weights of these compounds range up to 3000. The acids and most of the salts are very soluble in water and the acids and some salts are soluble in organic solvents.

Use: Phosphomolybdates and phosphotungstates are used as precipitants for basic dyes to form lakes and toners. The phospho- and siliconomolybdate groups are of key importance in the functioning of certain enzymes. There are many uses in analytical chemistry.

**HETP.** (1) Abbreviation for hexaethyl tetraphosphate; (2) abbreviation for height equivalent to a theoretical plate.

See theoretical plate.

**"Hetron"** [Ashland]. TM for an unsaturated polyester resin.

Use: For corrosion and chemical resistance, fire retardance, castings, marine gel coats, laminating, and molding.

**Heumann-Pfleger indigo synthesis.** Cyclization of phenylglycine to indoxyl followed by oxidation by air or oxidizing agents, such as ferric chloride, to yield indigo.

**heuristic.** See computational chemistry.

**Hevesy, Georg de.** (1885-1966). A Hungarian chemist who won Nobel prize in chemistry in 1943. He discovered the element hafnium in 1923. One of his interesting projects involved the calculation of the percentages of chemical elements in the universe. He also was involved in research using radioactive lead and phosphorus traces. His work included the separation of isotopes by physical means. His Ph.D. was granted at Freiburg in 1908.

**hexa-**. Prefix signifying six.

**hexabromoethane.**  $C_2Br_6$ .

Properties: Yellowish-white, rhombic needles; slightly soluble in water, alcohol; mp 149°C (decomposes with separation of bromine).

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